

and from the *Polonian* disease one may believe them such, yet I think we have not the least encouragement to either from the *Microscope*, much less positively to assert them such. And perhaps the very essence of the *Plica Polonica* may be the hairs growing hollow, and of an unnatural constitution.

And as for the *Analogie*, though I am apt enough to think that the hairs of several Animals may be perforated somewhat like a Cane, or at least have a kind of pith in them, first, because they seem as 'twere a kind of Vegetable growing on an Animal, which growing, they say, remains a long while after the Animal is dead, and therefore should like other Vegetables have a pith; and secondly, because Horns and Feathers, and Porcupine's Quills, and Cats Brisles, and the long hairs of Horses, which come very neer the nature of a mans hair, seem all of them to have a kind of pith, and some of them to be porous, yet I think it not (in these cases, where we have such helps for the sense as the *Microscope* affords) safe concluding or building on more then we sensibly know, since we may, with examining, find that Nature does in the make of the same kind of substance, often vary her method in framing of it: Instances enough to confirm this we may find in the Horns of several creatures: as what a vast difference is there between the Horns of an Oxe, and those of some sorts of Staggs as to their shape? and even in the hairs of several creatures, we find a vast difference; as the hair of a man's head seems, as I said before, long, *Cylindrical* and sometime a little *Prismatical*, solid or impervious, and very small; the hair of an *Indian* Deer (a part of the middle of which is described in the third Figure of the fifth *Scheme*, marked with F) is bigger in compass through all the middle of it, then the Brisle of an Hogg, but the end of it is smaller then the hair of any kind of Animal (as may be seen by the Figure G) the whole belly of it, which is about two or three Inches long, looks to the eye like a thread of coarse Canvas, that has been newly unwreath'd, it being all wav'd or bended to and fro, much after that manner, but through the *Microscope*, it appears all perforated from side to side, and Spongie, like a small kind of spongy Coral, which is often found upon the *English* shores; but though I cut it transversely, I could not perceive that it had any pores that ran the long-way of the hair: the long hairs of Horses C C and D, seem *Cylindrical* and somewhat pithy; the Brisles of a Cat B, are conical and pithy: the Quills of Porcupines and Hedghoggs, being cut transversely, have a whitish pith, in the manner of a Starr, or Spur-rowel: Piggs-hair (A) is somewhat *triagonal*, and seems to have neither pith nor pore: And other kinds of hair have quite a differing structure and form. And therefore I think it no way agreeable to a true natural Historian, to pretend to be so sharp-sighted, as to see what a pre-conceiv'd *Hypothesis* tells them should be there, where another man, though perhaps as seeing, but not forestall'd, can discover no such matter.

But to proceed; I observ'd several kind of hairs that had been Dyed, and found them to be a kind of horny *Cylinder*, being of much about the transparency of a pretty cleer piece of Oxe horn; these appear'd quite through-

throughout ting'd with the colours they exhibited. And 'tis likely, that those hairs being boyl'd or steep'd in those very hot ting'd liquors in the Dye-fat, And the substance of the hair being much like that of an Oxe's Horn, the penetrant liquor does so far mollifie and soften the substance, that it sinks into the very center of it, and so the ting'd parts come to be mix'd and united with the very body of the hair, and do not (as some have thought) only stick on upon the outward surface. And this, the boiling of Horn will make more probable; for we shall find by that action, that the water will insinuate it self to a pretty depth within the surface of it, especially if this penetrancy of the water be much helped by the Salts that are usually mix'd with the Dying liquors. Now, whereas Silk may be dyed or ting'd into all kind of colours without boiling or dipping into hot liquors, I ghes the reason to be two-fold: First, because the filaments, or small cylinders of Silk, are abundantly smaller and finer, and so have a much less depth to be penetrated then most kind of hairs; and next, because the substance or matter of Silk, is much more like a Glew then the substance of Hair is. And that I have reason to suppose: First, because when it is spun or drawn out of the Worm, it is a perfect glutinous substance, and very easily sticks and cleaves to any adjacent body, as I have several times observed, both in Silk-worms and Spiders. Next, because that I find that water does easily dissolve and mollifie the substance again, which is evident from their manner of ordering those bottoms or pods of the Silk-worm before they are able to unwind them. It is no great wonder therefore, if those Dyes or ting'd liquors do very quickly mollifie and tinge the surfaces of so small and so glutinous a body. And we need not wonder that the colours appear so lovely in the one, and so dull in the other, if we view but the ting'd cylinders of both kinds with a good *Microscope*; for whereas the substance of Hair, at best, is but a dirty dusky white somewhat transparent, the filaments of Silk have a most lovely transparency and cleerness, the difference between those two being not much less then that between a piece of Horn, and a piece of Crystal; the one yielding a bright and vivid reflection from the concave side of the cylinder, that is, from the concave surface of the Air that incompasses the back-part of the cylinder; the other yielding a dull and perturb'd reflection from the several *Heterogeneous* parts that compose it. And this difference will be manifest enough to the eye, if you get a couple of small Cylinders, the smaller of Crystal Glass, the other of Horn, and then varnishing them over very thinly with some transparent colour, which will represent to the naked eye much the same kind of object which is represented to it from the filaments of Silk and Hair by the help of the *Microscope*. Now, since the threads of Silk and Serge are made up of a great number of these filaments, we may henceforth cease to wonder at the difference. From much the same reason proceeds the vivid and lovely colours of Feathers, wherein they very far exceed the natural as well as Artificial colours of hair, of which I shall say more in its proper place.

The Teguments indeed of creatures are all of them adapted to the peculiar use and convenience of that Animal which they inwrap; and very much